

March 6th 1865

My dear Mr. Canton.

You may perhaps remember that the curious ova described by you as found in the eye of a turtle was afterward observed by myself in connection with a fluke worm in the blood of a turtle - Hannover F. Conradi has not written me - that the

area in question were
discovered by him
long before & delineated
& published in 1852. He
has in proof of this sent
me the work containing
the plate which proves
identity. He claims
priority of discovery
as therefore which I
suppose you will
without difficulty
accede to - and he
also asked me to

communicate the matter
to you - I suppose the
best way will be to
write a little note to
one of the newspapers
stating the facts of the
case - I will be happy
to attend to it if you
like.

Very truly yours
Arthur Leared

E. Condon Esq

39 Norland Square
Hove, H. S.
25th July.

Dear Sir

I have recently made
60 specimen slides, a thick
black parasitic one of con-
siderable interest.

I purpose writing
you at my leisure a
detailed opinion as
soon as we can get
overlooked them to
you & you can make
use of the 'note' you
have subsequently.

X 30 diam.

I addish in a view of
probably accurate in addition
to what you will find.

with answers to the following
queries.

(all the yes of)

1. Were both turtles infected?
2. Were the turtles true salt
-water Turtles — or were
they fresh-water Turtles,
ie. f-l-o-w-t turtles?
3. Where did the Turtles
come from? — Can you
name the species?
4. Did you observe any
parasites (visible to the naked
eye) on the Turtles?
5. Are you confident that
these eggs are really
belong to the Conjugation?

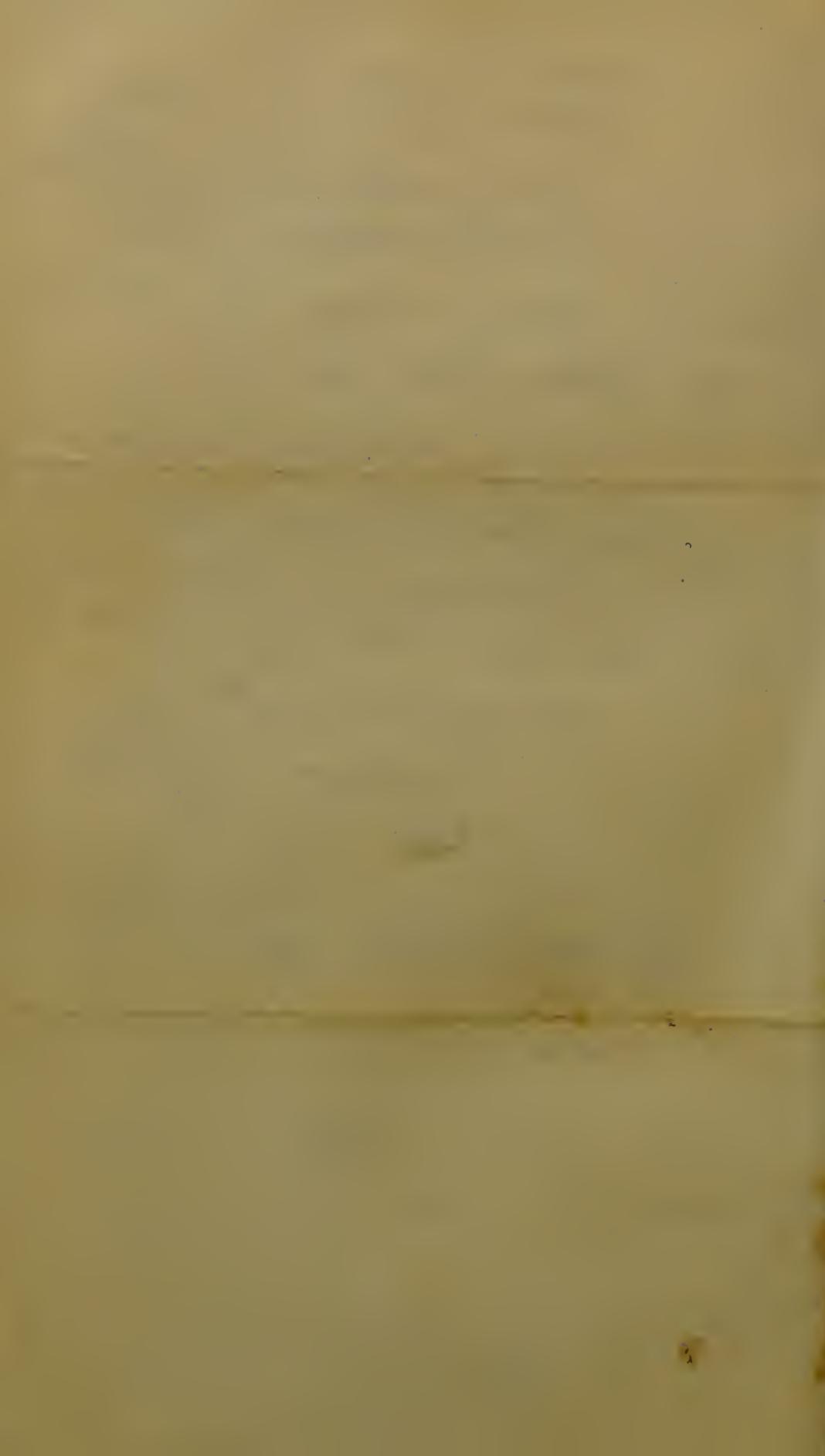
This last q is right.
I sincerely thank you for

have mistaken this - at
least the fact of their
being filamentary holds
absolutely precludes that
idea. & is also at variance
with recorded opinions.

" You will forgive my
being so particular, as to facts
I mean while awaiting your
own reply, believe me

Yours very truly
J. Spencer Stodd.

J. C. Stodd.



(13.)

AN

ACCOUNT OF SOME PARASITIC OVA

FOUND ATTACHED TO THE

CONJUNCTIVÆ OF THE TURTLE'S EYES.

BY

EDWIN CANTON, F. R. C. S.,

SURGEON TO THE CHARING CROSS HOSPITAL, AND LECTURER ON SURGICAL ANATOMY.



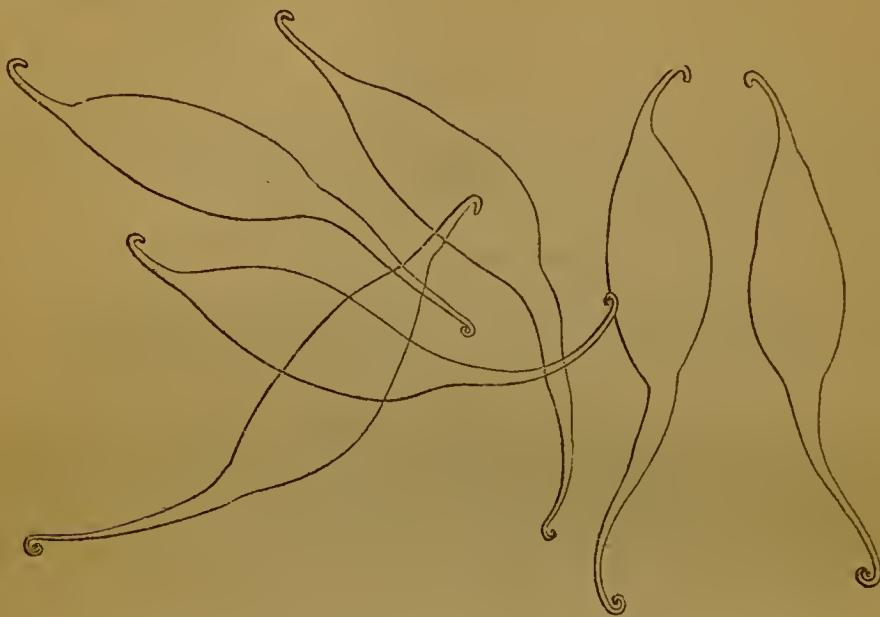
IN July last, while engaged in the microscopical examination of the tissues of the eye of the common turtle, I discovered a large number of parasitic ova attached to all parts of the conjunctiva, with the exception of the modified portion of this membrane which extends across the cornea. The ova were equally numerous in both eyes. I repeated the examination, and, in five consecutive instances, met with these cystic bodies, in the same situation, in the two eyes of each of the turtles. In a sixth specimen, however, the ova were entirely wanting.

The turtles were *lively* at their death, which was of a sudden and violent character, and took place in the city. I could discover no epizoon on any part of their heads which were sent to me.

With such fixedness are the ova adherent to the conjunctiva, that not even roughly scraping off the thick, slimy, secretion, which covers this tunic, detaches them. I detected them once, within a few hours after the death of the animal they infest, and, in this instance, found them present in large numbers, on the eyes of a turtle weighing upwards of a hundred pounds. As I have already stated, they were seen on all parts of the palpebral and sclerotic, but not on the corneal conjunctiva.

So minute are these bodies, that they are undistinguishable to the naked eye.

Subjoined is a magnified view of them, in a group, as shown under the microscope, and drawn by the aid of the camera lucida:



Form.—Elongated, unequally ovate; at each extremity, the body is prolonged into an infundibuliform appendage, one of which is about a third of the length of the long diameter of the body, and terminates in a fine point, abruptly curved so as to constitute a short hook, whereby secure anchorage to the conjunctiva is effected; the other is larger and longer, nearly equalling in length the whole ovum, and ends also in a fine point; it is curved at the terminal part, so as to form a coil, which often presents one or two turns; this may be regarded as the suctorial portion. The body is a simple sac, entirely destitute of internal organs.

Size.—For the convenience merely of stating the following measurements, I may refer to the different parts of an ovum as *head*, *neck*, *body*, and *tail*. Some of the ova are rather smaller than others, but the annexed has reference to one of larger and more ordinary dimensions:—

	Inches.
Total length,	·0132
Length of neck,	·0054
" body,	·0056
" tail,	·0022
Breadth of head,	·00015
Neck a little below this,	·0001
" at origin from body,	·0005
Body at its widest part,	·0023
Tail at origin,	·0003

Colour.—The colour of all the ova is yellowish; or, perhaps, it may more correctly be said to be a light, ochreish-yellow; this tint pervades uniformly every part.

Consistence.—The chitinous shell-membrane appears to be tough and resistent; for when, in examination, an ovum has been irregularly compressed, it is thrown into large, and sharply-angled folds,—no fine wrinkling is to be observed.

Aggregation.—The ova are commonly found to be solitary, or in pairs; more rarely are they gregarious; but when in groups, there are five, eight, or sometimes ten, collected together.

In all the eyes examined, with the exception of those of the sixth turtle, I discovered *a second form of ovum*, not differing, however, in any material degree, from that already described.



The body is elongated, but not so swollen as in the preceding variety, though it is still unequally ovate. The shorter filament, which terminates one extremity, is less regularly infundibuliform; its thinnest portion is rather suddenly bent at an acute or right angle to the body, and ends in two hooks, joined by their convexities. From the opposite portion of the body the suetorial filament passes, and is, relatively to the corresponding part in the first-mentioned ova, longer, and more thread-like; slightly funnel-shaped at its commencement, it soon contracts, and, after a more or less flexuous course, ends by a rather sudden expansion into a flattened disc.

These ova are exceedingly few in number, and are generally smaller than those first described; they are, for the most part, found solitary: I presume them to be the same as those previously mentioned, only in an earlier stage of development.

Dr. Spencer Cobbold has obligingly examined my specimens, and I am indebted to him for the favour of the following communication:—“ After a careful examination, I have arrived at the conclusion that the foreign cystic bodies adherent to the conjunctiva, are the ova of an ectozoon, the latter being parasitic, either upon the turtle itself, or upon some crustaceous epizoon likewise infesting the turtle.

“ These ova differ in appearance from any I have hitherto

encountered, and are especially interesting in the circumstance of their presenting filamentary appendages at both ends. The hook-like filament is, probably, distinctive of the species of parasite to which the ova may be referred.

"The eggs of various forms of entozoa, and also in the allied ectozoa, display filamentary appendages at both ends of the chitinous shell-capsules; these processes generally resembling each other, as may be seen, e. g. in *Monostoma verrucosum* infesting the fox; in *Tænia cyathiformis* belonging to the swallow, and in *Tænia variabilis* of the gambet. In some cases, where the filaments are shorter, the eggs more closely resemble those to which you have directed my attention. This is evident in the ova of a curious trematode—*Octobothrium lanceolatum*—attached to the gills of the common herring, and likewise in the eggs of the still more eccentric-looking parasite—*Polystoma appendiculata*—found on the branchiæ of various marine fishes.

"In all probability, the entozoon from which the ova you have found proceed, is closely allied to those forms of trematode, or fluke-worm parasites whose eggs display only one thread-like appendage, or 'holdfast.' For example, the eggs of different species of *Dactylogyrus* infesting the gills of the pike exhibit ova of this kind (a good representation of this is given by Guido Wagener in 'Siebold and Kölliker's Zeitschrift,' vol. ix. Plate v., fig. 8.) The eggs of *Diplozoon paradoxum* are also especially worthy of notice, as from G. Wagener's recent Prize Essay ('Beiträge zur Entwicklungs-geschichte der Eingeweidewürmer'), it would appear that the single filament is liable to vary in length; whilst (as Van Beneden, Dujardin, and other observers have shown,) the end of the filament is ordinarily coiled upon itself in a manner precisely analogous to that noticeable in the ova from the eye of the turtle.

"On the whole, therefore, I think we may safely conclude that the ova under consideration are referable to a parasite more or less allied to the well-known *Diplozoon paradoxum* of Nordman; and I have little doubt that—if not already known to some Continental helminthologist—we shall, ere long, discover them in the oviducts of some species of *Polystoma*, *Tristoma*, *Octobothrium*, *Dactylogyrus*, or other allied genus of trematode worm."

